Application No. 10/766,736
Filed: January 28, 2004
TC Art Unit: 1725
Confirmation No.: 3473

THE SPECIFICATION

Please amend the paragraph on page 1, lines 8-12, as follows:

This application is a ~~divisional~~ continuation application under §1.53(b) of prior Application No. 09/740,513 filed December 19, 2000, entitled: INJECTION MOLDING MACHINE FOR LOW-MELTING POINT METALLIC MATERIAL, now U.S. Patent No. 6,866,088, which claims priority to Japanese patent application No. 11-375,370 filed December 28, 1999.

Please amend the paragraph on page 6, lines 20-30, as follows:

In the drawings, a reference numeral 1 is an injection mechanism and a reference numeral 2 is a mold-clamping mechanism, and are both arranged on an upper surface of a base 3. A reference numeral 4 is a pedestal 4 which is arranged so as to rotate or, advance or retreat freely to the mold-clamping mechanism 2, and a frame 5 constituted by a pair of plate bodies ~~51 and 51~~ 5a which the upper surface is oblique is provided on the rear portion so as to swivel freely, and the described-above injection mechanism 1 is provided obliquely on the frame 5 in a manner that a nozzle side is directed in a downward direction to the mold-clamping mechanism 2.

Please amend the paragraph on page 6, line 31, to page 7, line 12, as follows:

The described-above injection mechanism 1 is constituted by a melting cylinder 11, agitating and injection means in the inside, which will be described hereinafter, an injection cylinder 12 provided spacing an interval on the rear-end side of the melting

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cylinder 11, an electric motor 14 for agitating attached to a bifurcated-shape supporting leg 13 arranged an under side of a rear end of the melting cylinder 11, and a ~~feeing~~ feeding device 15 applying the powdered low-melting point metallic material consisting of nonferrous metals into the melting cylinder. The ~~feeing~~ feeding device 15 is constituted by a horizontal cylinder 15a and a screw shaft 15c in the inside thereof which is rotated by an electric motor 15b provided the end of the cylinder. Although being omitted in the drawings, it is constituted by a structure capable of attaching a heater for preheating the material to a surrounding of the cylinder as required.

Please amend the paragraph on page 7, line 30, to page 8, line 4, as follows:

A supply port 19 is arranged on an upper side of an intermediate portion of such melting cylinder, and the described-above ~~feeing~~ feeding device 15 for the metallic material is connected to the supply port 19 through a pipe passage 20. Moreover, a rear end of the melting cylinder 11 is in the opened condition, and an agitating member 21 and an injection member 22 for the molten metal constituting the described-above agitating and injection means are arranged in the inside from the rear end to the inside.

Please amend the paragraph on page 8, lines 5-17, as follows:

The described-above agitating member 21 is constituted by a revolution shaft that agitating wings 24 ~~and 24~~ with a plurality of stripes are formed intermittently so as to swivel freely on an outer periphery of a tip portion of a hollow shaft portion 23

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having a through-hole at the central position as shown in Fig. 4. These agitating wings 24 ~~and 24~~ have an external diameter approximately equal to an inner diameter of the melting cylinder 11. Moreover, a flange 25 for a partition which a sealing ring closed proximity to an inner peripheral surface of the melting cylinder 11 is fitted to a the outer periphery is formed unitarily on a periphery of the shaft portion in the rear than the agitating wing 24 of the hollow shaft portion 23.

Please amend the paragraph on page 8, lines 18-25, as follows:

Moreover, a pulley 26 is fixed on the end of the described-above hollow shaft portion 23 projecting from an opening end of the melting cylinder 11, and a timing belt 28 is looped over this pulley 26 and a pulley 27 of a driving shaft end of the described-above electric motor 14, and the agitating member 21 is revolved by the electric motor 14 in the melting cylinder, and the molten metal can be agitated by the described-above agitating wings 24 ~~and 24~~.

Please amend the paragraph on page 8, line 26, to page 9, line 1, as follows:

The described-above injection member 22 is constituted by an injection rod 29 inserted into a through-hole of the described-above hollow shaft portion 23 and to be provided slidably freely on a central position of the agitating member 21 and an injection plunger 30 attached to the tip ~~and~~ end to fit to the described-above weighing chamber 17 from the front surface of the agitating member 21, and a screw 29a shutting off a molten metal intruded

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into a clearance between the hollow shaft portion 23 on intermediate region of the injection rod 29 is formed.

Please amend the paragraph on page 10, line 26, to page 11, line 2, as follows:

Such injection cylinder 12 and the described-above melting cylinder 11 are the ends of the described-above supporting legs 13 and 34 projected to both sides of the respective under side and arranged are inserted into support shafts 40 ~~and 40~~ arranged side by side on both sides of an oblique-upper surface of the described-above frame 5, and are attached in a manner that the nozzle member 10 is placed on the lower side and is directed in a downward direction, thereby the described-above injection mechanism 1 installed obliquely to the described-above mold-clamping mechanism 2 to be constituted.

Please amend the paragraph on page 11, lines 16-27, as follows:

In the frame 5 constituted by the described-above pair of plate bodies ~~51 and 51~~ 5a, a support shaft 40 is attached to the inside of a plate body which an upper surface is formed on an surface inclined in an inward direction with an angle of approximately 45° with members 41 ~~and 41~~ at both sides. This frame 5 is placed and arranged on a gate-type receiving seat 6 arranged on the rear end of the described-above pedestal 4 so as to swivel freely (not shown), and the nozzle touch device 48 of the nozzle member 47 provided horizontally on the front surface of the nozzle touch block 45 with member 52 across from a central position of the inside of the receiving seat 6 to the described-above nozzle touch block 45 is arranged.

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Please amend the paragraph on page 11, line 31, to page 12, line 7, as follows:

A hydraulic cylinder 49 of this nozzle touch device 48 is fixed to a receiving member 50 of a central position within the pedestal ~~6~~ 4 installed on the base 3, moreover, a rod member 51 coupled with a piston rod (not shown) in the inside the tip is coupled with the described-above nozzle touch block 45, and the pedestal 4 is moved in the advancing and/or retreating directions together with the injection mechanism 1 of the upper surface of the frame 5 by a movement of the advancing and/or retreating directions of the rod member 51, whereby a touch of the nozzle can be performed to a molding 7 of the described-above nozzle member 47.

Please amend the paragraph on page 12, lines 8-19, as follows:

The upper of the inside of the described-above nozzle touch block 45 is formed on an inclined rear surface positioning at the right angle to the nozzle member 10 of the described-above injection mechanism 1, and a gate for nozzle-touching is opened and arranged on inclined rear surface. Moreover, a hot runner 53 communicating the described-above nozzle member 47 with the nozzle member 10 of the injection mechanism 2 is bent and formed on the inside of the nozzle touch block, whereby nozzle-touching can be performed without a clearance and a leakage of the molten metal at injection and filling can be prevented, even though the injection mechanism 1 is installed obliquely on the mold-clamping ~~mechanism 3~~ mechanism 2.

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Please amend the paragraph on page 13, lines 1-16, as follows:

First, the inside is raised to the high temperature than the melting point by heating the melting cylinder 11 by the band heater 16 of the outer periphery to temperature of approximately 620°to 680°. Next, the hollow shaft portion 23 is made an agitated condition by revolving using the described-above electric motor 14 with at a set speed. When applying the powdered metallic material into the melting cylinder 11 from the supply port 19 with the described-above ~~feeing~~ feeding device 15 in such condition, the metallic material is fallen into the melt of the molten metal stored in the region of the agitating wings 24 ~~and 24~~ being revolving together with the hollow shaft portion 23 immediately since the melting cylinder 11 is inclined in a downward direction, whereby it melts due to heat stored in the molten metal, as well as is mixed into the melt by the agitating wings 24 ~~and 24~~. Therefore, it melts in an extremely short time.

Please amend the paragraph on page 14, line 29, to page 15, line 7, as follows:

Agitation of the molten metal by revolution of the described-above agitating wings 24 ~~and 24~~ can be performed continuously, since the agitating member 21 and the injection member 22 are constituted separately, also during such injecting and filling from weighing. According to this operation, melting and keeping warm for the molten metal can be stabilized. Melting of the metallic material is performed by heating from the outside source, and the agitating member 21 has only to prevent nonuniformity in temperature of the metallic material in the melting cylinder molten by heating by revolution, and injecting and weighing is

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performed by the agitating member 21 in the central portion, whereby the melting efficiency of the metallic material can be performed.

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